GB1288745

Title:
No title available

Abstract:
1288745 Vehicle steering column STANDARD-TRIUMPH MOTOR CO Ltd 2 Oct 1969 [11 Oct 1968] 48269/68 Heading B7H [Also in Division F2] A vehicle steering column includes a flexible joint comprising two pairs of axial prongs 27, the prongs of one pair being intercalated with the prongs of the other pair and separated by interposition of resiliently deformable material 30. The central space 31 is hollow. The column also includes a pair of Hooke's joints 10, 11, the yokes 12, 13 of which are provided with serrated axial bores 14, 15 and clamping bolts 18, 19 for connection to serrated shafts extending from a steering gearbox and a steering wheel respectively.

PATENT SPECIFICATION

(11) 1 288 745

DRAWINGS ATTACHED

1 288 745

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(54) IMPROVEMENTS IN OR RELATING TO A VEHICLE STEERING COLUMN

(71) We, THE STANDARD-TRIUMPH MOTOR COMPANY LIMITED, a British Company, of Canley, Coventry, Warwickshire, do hereby declare the invention, for which we pray that a patent may be granted to us, and the method by which it is to be performed, to be particularly described in and by the following statement:—

The invention relates to a steering column, for a vehicle, for transmitting steering torque from a steering wheel to a steering gear box. It is known to provide such a steering column with a universal drive coupling, and to support the steering wheel on bearings from the vehicle body structure. Vibration rising from the vehicle road wheels may be transmitted up the steering column and through the bearings to vibrate the vehicle structure and cause an unacceptable noise. In the case of a vehicle having power steering further undesirable noise may be so transmitted from the power steering mechanism and valves in the steering gear box.

It is an object of this invention to reduce such undesirable noise and vibration.

According to the invention a steering column includes a flexible joint arranged to drivably interconnect a steering wheel and steering mechanism, said flexible joint comprising a pair of fork portions each provided with two diametrically-opposed, axially-directed prongs, the prongs of one fork portion being intercalated with the prongs of the other fork portion, elements of resiliently deformable material being arranged between adjacent prongs whereby to impart axial and torsional flexibility to the joint.

Preferably, said resiliently deformable material is elastomeric material extending radially for a distance substantially equal to the radial thickness of the prongs, whereby to reduce stress concentration in said elastomeric material.

Desirably, there is provided a universal joint connected to one of said fork portions.

Conveniently, the prongs of said fork portion are integral with a member of said universal joint.

Preferably, there is provided another universal joint connected to the other of said fork portions.

Desirably, said other universal joint is connected by means of a shaft to said other fork portion.

The invention is described, by way of example only, with reference to the accompanying drawings, in which:—

Figure 1 is an elevation of part of a steering column according to the invention;

Figure 2 is an end view of Figure 1;

Figure 3 is a plan of Figure 1, and

Figure 4 is a section along the line 4—4 in Figure 1.

In the drawings, two Hooke's joints 10 and 11 have respective yokes 12 and 13 formed with serrated axial bores 14 and 15. Radially directed slits 16 and 17 enable clamp bolts 18 and 19 to clamp the yokes 12 and 13 through their respective serrations 14 and 15 onto unshown correspondingly serrated shafts, one of which is fast with the vehicle steering gear box and the other is fast with a shaft connected to the steering wheel.

The Hooke's joint 10 has a normal cruciform member 20 pivoted in the yoke 12 and in a corresponding yoke 21 set at right angles to the yoke 12. A steel bar 22 is welded to the yoke 21 at one end, and at the other end is welded to a first member of a resiliently distortable coupling 24.

The yoke 13 of the Hooke's joint 11 is connected by a cruciform member 25 to another yoke 26 at right angles to the yoke 13.

The resiliently distortable couping 24 is formed of four substantially identical fingers or prongs 27, two of which are integral with a disc 28, which is itself integral with the yoke 26. The other two fingers 27 are integral with a disc 29 to which the shaft 22

is welded. The two pairs of fingers are axially overlapping and are arranged circumferentially intermediate each other. The region intermediate the fingers is filled with rubber, or other similar suitable resiliently deformable elastomeric material, and in order to reduce undesirable stress concentrations, there is a central bore 31 free of the material.

It will be seen that the first member 23 of the resiliently distortable coupling 24 is completely isolated by resiliently deformable material 30 from the second member comprising the fingers 27 fast with the disc 28 and the yoke 26. The interposed resiliently deformable material 30 thereby attenuates both axial and torsional vibration which would be transmitted from one of the Hooke's joints 10, 11 to the other.

WHAT WE CLAIM IS:—

1. A steering column including a flexible joint arranged to drivably interconnect a steering wheel and steering mechanism, said flexible joint comprising a pair of fork portions each provided with two diametrically-opposed, axially-directed prongs, the prongs of one fork portion being intercalated with the prongs of the other fork portion, elements of resiliently deformable material being arranged between adjacent prongs whereby to impart axial and torsional flexibility to the joint.

2. A steering column, as claimed in Claim 1, wherein said resiliently deformable material is elastomeric material extending radially for a distance substantially equal to the radial thickness of the prongs, whereby to reduce stress concentration in said elastomeric material.

3. A steering column, as claimed in either of the preceding claims, wherein there is provided a universal joint connected to one of said fork portions.

4. A steering column, as claimed in Claim 3, wherein the prongs of said fork portion are integral with a member of said universal joint.

5. A steering column, as claimed in Claim 3 or Claim 4 wherein there is provided another universal joint connected to the other of said fork portions.

6. A steering column as claimed in Claim 5, wherein said other universal joint is connected by means of a shaft to said other fork portion.

7. A steering column, substantially as hereinbefore described with reference to and as shown in the accompanying drawing.

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1288745 COMPLETE SPECIFICATION
2 SHEETS *This drawing is a reproduction of the Original on a reduced scale*
Sheet 1

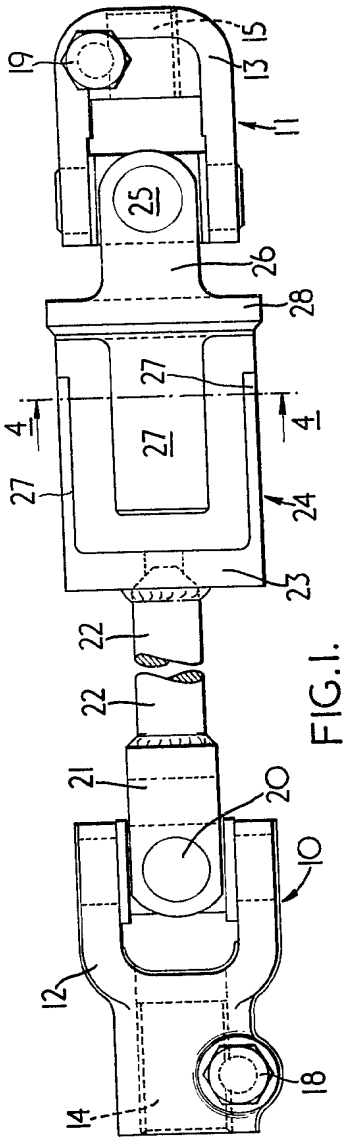

FIG.1.

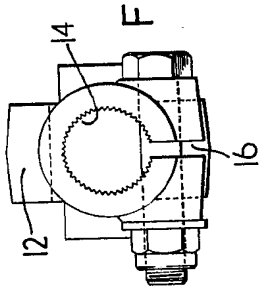

FIG.2.

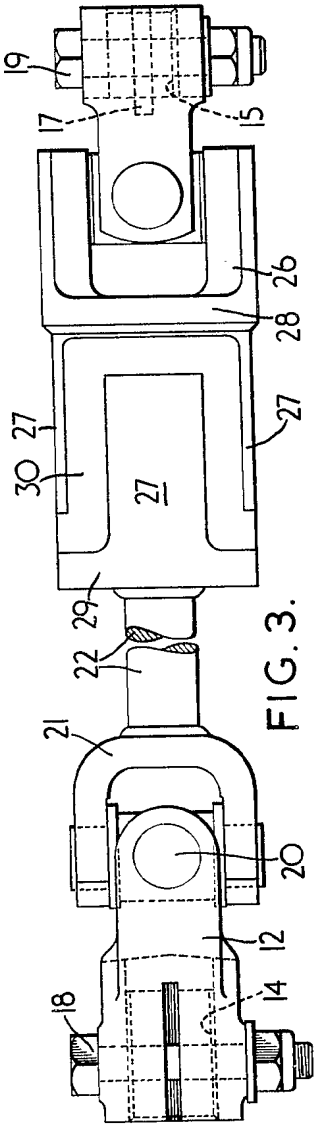

FIG. 3.

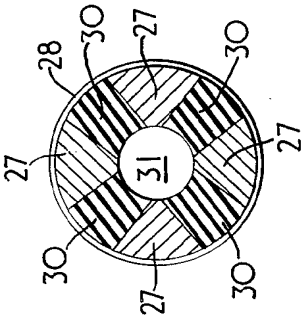

FIG. 4.